Tan Spot of Wheat

FarmFacts

Produced by Saskatchewan Agriculture and Food and Saskatchewan Rural Development

Tan spot, also called yellow leaf spot, is a wheat disease caused by the fungus **Pyrenophora tritici-repentis**. It is common in the prairie provinces, but seldom causes serious damage. Leaf spotting reduces the photosynthetic area of the leaves, which can result in poor grain filling and yield losses, especially if the upper two leaves are infected. In North Dakota, average yield losses of 7.4% have been reported, with losses commonly ranging from 3 - 15% and occasionally higher. Losses due to tan spot are probably similar in Saskatchewan.

Symptoms:

Symptoms appear on leaves as small, tan-brown flecks or spots which expand into tan, irregular lens-shaped lesions about 5-13 mm long. Lesions often have a darker brown spot in the center, which may be more visible when the leaf is held up to the light. Leaf spots are usually surrounded by a zone of yellow.

As the disease spreads, leaf spots often join together to produce large irregular areas of dead tissue. Leaves may be killed prematurely.

Tan spot is also capable of infecting the seed, causing a reddish or pinkish kernel discolouration known as "red smudge". The seed may also be finely blistered, giving the kernels a slightly frosted appearance. Kernels are plump and normal sized to slightly shrunken. The vigour or ability of seed to germinate is not normally affected. Red smudge is most commonly associated with durum wheat.

Disease Cycle:

The fungus survives and reproduces on infected wheat straw or stubble. Large numbers of spores are produced on the wheat crop residues, which are carried by air currents to infect living wheat plants in the same or nearby fields. Seedlings are often infected as they emerge from the soil, particularly if planted on fields with infected wheat straw or stubble on the surface.

Tan spot lesions on wheat

Additional spores may be produced on leaf spots or dying leaves. Disease outbreaks are favoured by periods of overcast, humid weather with fog or rain and warm temperatures (18 - 28°C is ideal). The fungus requires between 6 and 24 hours of continuous leaf wetness to cause infection. Dry weather will limit disease development and spread.

Infection of seed (red smudge) is favoured by wet weather at heading and early grain filling. The conditions required to cause red smudge, including timely showers and large numbers of air-borne spores do not occur every year.

Other tan spot hosts include crested and intermediate wheatgrass, Russian and Altai wild ryegrass, bromegrass and other grass hosts. Rye is also susceptible but is not usually severely affected. Barley and oats are highly resistant. Grass hosts may play a role in overwintering of the fungus in some locations, but the importance of these other hosts under Saskatchewan conditions has not been determined.

Control:

1. Crop Rotation:

Rotation to crops other than wheat, rye or forage grasses for two years or more will reduce the amount of disease in the subsequent wheat crop. A single year out of wheat is not usually sufficient to reduce disease carry over on debris. Continuous cropping of wheat, especially into wheat stubble may allow the disease to build up to potentially serious levels. Crop rotation does not ensure complete freedom from tan spot due to the wind-blown nature of the spores, however rotation will help to reduce the amount of disease.

2. Cultivation:

Turning under the wheat straw and stubble will limit multiplication of the fungus due to more rapid decomposition of the straw. Also, straw that is buried is unable to release spores into the air.

3. Fungicides:

Application of registered fungicides may be beneficial under intensive cereal management situations when disease is severe. High yields of over 50 bu/acre are required to recover the cost of fungicide sprays. Refer to current provincial recommendations.

4. Resistance:

All currently recommended varieties are susceptible to tan spot. In general, durum wheat is more susceptible than hard red spring wheat. Sources of resistance have been identified in breeding programs in western Canada, therefore it is possible that future varieties will have tan spot resistance.

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